

REMARKS

Claims 1-7 and 9-24 are pending in this application. By this Amendment, claims 1 and 17 are amended and claims 21-24 are added. Support for the amendments to claims 1 and 17 may be found at least on page 26, lines 5-10 of the specification. Support for new claims 21 and 22 may be found at least on page 26, lines 5-10 of the specification and support for new claims 23 and 24 may be found at least on page 10, lines 15-20 and page 12, lines 1-5 of the specification and in the claims. No new matter is added by this Amendment. In view of at least the following, reconsideration and allowance are respectfully requested.

I. Interview

The courtesies extended to Applicant's representatives by Examiners Martin and Shah at the interview held November 20, are appreciated. The reasons presented at the interview as warranting favorable action are incorporated into the remarks below and constitute Applicant's record of the interview.

II. Claim Objection

The Office Action objects to claim 1 over an informality. This objection is respectfully traversed.

By this Amendment, claim 1 is amended as suggested by the Examiner. Specifically, claim 1 recites, in part, "providing the first liquid".

Accordingly, withdrawal of the objection is respectfully requested.

III. Claim Rejections under 35 U.S.C. §103

The Office Action rejects claims 1-3, 6-7, 9, 10, 12, 14, 15 and 17-19 under 35 U.S.C. 103(a) over U.S. Patent Publication No. 2003/0064206 (Koyano) in view of U.S. Patent Publication No. 2003/0043245 (Yamashita); rejects claims 4 and 5 under 35 U.S.C. §103(a) over Koyano, Yamashita and further in view of U.S. Patent Publication No. 2002/0077383 (Takao); rejects claims 11 and 20 under 35 U.S.C. §103(a) over Koyano, Yamashita and

further in view of U.S. Patent Publication No. 2003/0234846 (Koga); rejects claim 13 under 35 U.S.C. §103(a) over Koyano, Yamashita and further in view of U.S. Patent Publication No. 2002/0058729 (Oshima); and rejects claim 16 under 35 U.S.C. §103(a) over Koyano, Yamashita and further in view of U.S. Patent Publication No. 2001/0008411 (Maze). These rejections are respectfully traversed.

As amended, independent claim 1 recites, in part, "providing the first liquid, having a colorant within the range of 0.5% - 20% by mass, on a recording medium" and "a contact angle of the second liquid with respect to plain paper is less than 85° and a contact angle of the second liquid with respect to region where the first liquid is provided on plain paper is 60° or more."

Similarly, independent claim 17 recites, in part, "an image is formed at least by jetting the first liquid, which includes a colorant within the range of 0.5% - 20% by mass, from the recording head onto the recording medium" and "a contact angle of the second liquid with respect to plain paper is less than 85° and a contact angle of the second liquid with respect to the region where the first liquid is provided on plain paper is 60° or more."

The above identified features are not anticipated nor rendered obvious over the teachings of Koyano, Yamashita, Takao, Koga, Oshima, and Maze, in any combination.

Applicant respectfully submits that the applied references, in any combination, fail to teach, suggest or disclose a first liquid with a colorant within the range of 0.5% - 20% by mass that is provided on a recording medium, wherein a contact angle of a second liquid, which is a black ink, with respect to plain paper is less than 85° and a contact angle of the second liquid with respect to the region where first liquid is provided on plain paper is 60° or more.

The present application relates to an ink-jet recording method and apparatus that can prevent or reduce inner color bleeding between a color ink, the first liquid, and black ink, the

second liquid. To achieve this effect, the present application discloses regulating the contact angle of the second liquid with respect to plain paper to be less than 85° and the contact angle of the second liquid with respect to the region where the first liquid is provided on plain paper to be 60° or more. These features are presently recited in independent claims 1 and 17.

Pursuant to the disclosure of the present application, when the contact angle of the second liquid with respect to a region where the first liquid is provided on plain paper is less than 60°, inner color bleeding may occur.

Applicant further submits that Koyano does not teach, suggest or disclose this relationship between the contact angle and the occurrence of inner color bleeding. Rather, Koyano merely broadly discloses the following: "[t]he contact angle of the recording ink against the recording material which has been applied with the pretreatment liquid is preferably not greater than 90°." (*See* Paragraph [0022]). Furthermore, Koyano relates to a method where the first liquid is a substantially colorless pretreatment liquid (*see* Paragraph [0029]) and the second liquid is a recording ink that forms a high quality image (*see* Paragraph [0018]). Therefore, the problem of inner color bleeding between the first and second liquid, an issue addressed by the present application, cannot be assumed based on the teachings of Koyano.

As amended, independent claims 1 and 17 are distinguishable from the Yamashita reference. Yamashita discloses examples of prepared ink compositions; however, the contact angle of the ink with respect to a region where another ink has been provided would not be 60° or more. Thus, Yamashita fails to cure the deficiencies of Koyano.

Koyano, Yamashita, Takao, Koga, Oshima, and Maze, in any combination, do not teach, disclose or suggest providing a first liquid having a colorant within the range of 0.5% - 20% by mass wherein, a contact angle of the second liquid with respect to plain paper is less than 85° and a contact angle of the second liquid with respect to region where the first liquid

is provided on plain paper is 60° or more. Thus, Takao, Koga, Oshima and Maze do not supply the subject matter missing in Koyano and Yamashita. Therefore, Koyano, Yamashita, Takao, Koga, Oshima and Maze, either individually or in any combination, do not teach, disclose or suggest the subject matter recited in claims 1 and 17.

Claims 2-7, 9-16 and 18-20 variously depend from claims 1 and 17. Because the applied references, in any combination, fail to render the subject matter of independent claims 1 and 17 obvious, dependent claims 2-7, 9-16 and 18-20 are patentable for at least the reasons that claims 1 and 17 are patentable, as well as for the additional features they recite.

Accordingly, withdrawal of the rejections is respectfully requested.

IV. New Claims

By this Amendment, claims 21-24 are added. Claims 21 and 22 further limit independent claims 1 and 17, such that the first liquid has a colorant within the range of 1% - 10% by mass. Support for new claims 21 and 22 may be found at least on page 26, lines 5-10 of the specification.

As discussed above, in relation to independent claims 1 and 17, new claims 21 and 22 are distinguishable from the cited references.

In regard to new claims 23 and 24, support for the new claims may be found at least in the specification on page 9, lines 15-19; page 10, lines 15-25; page 11, lines 3-6 and page 12, lines 1-11. Furthermore, Yamashita discloses the following: "It is necessary that the ink in the invention has a dynamic contact angle ... of the ink for ink jet recording on plain paper of about 60° or less after one second from dropping." (See Paragraph [0086]). Furthermore, Koyano discloses the following: "The contact angle of the recording ink against the recording material which has been applied with the pretreatment liquid is preferably not greater than 90°." (See Paragraph [0022]). Therefore, Yamashita does not disclose a contact angle of the second liquid with respect to plain paper that is between 61° and 85° and Koyano does not

disclose a contact angle of the second liquid with respect to the region where the first liquid is provided on plain paper that is between 91° and 110°.

Additionally, new claims 21-24 variously depend from claims 1 and 17. Because the applied references, in any combination, fail to render the subject matter of independent claims 1 and 17 obvious, dependent claims 21-24 are patentable for at least the reasons that claims 1 and 17 are patentable, as well as for the additional features they recite.

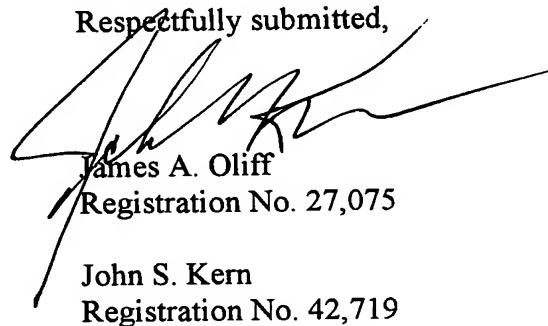
Accordingly, allowance of the claims is respectfully requested.

V. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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Attachment:

Amendment Transmittal

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